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Analyzing Digital Transformation using the Zachman Framework and SysML [video]

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ANALYZING DIGITAL TRANSFORMATION USING THE ZACHMAN FRAMEWORK AND SYSML

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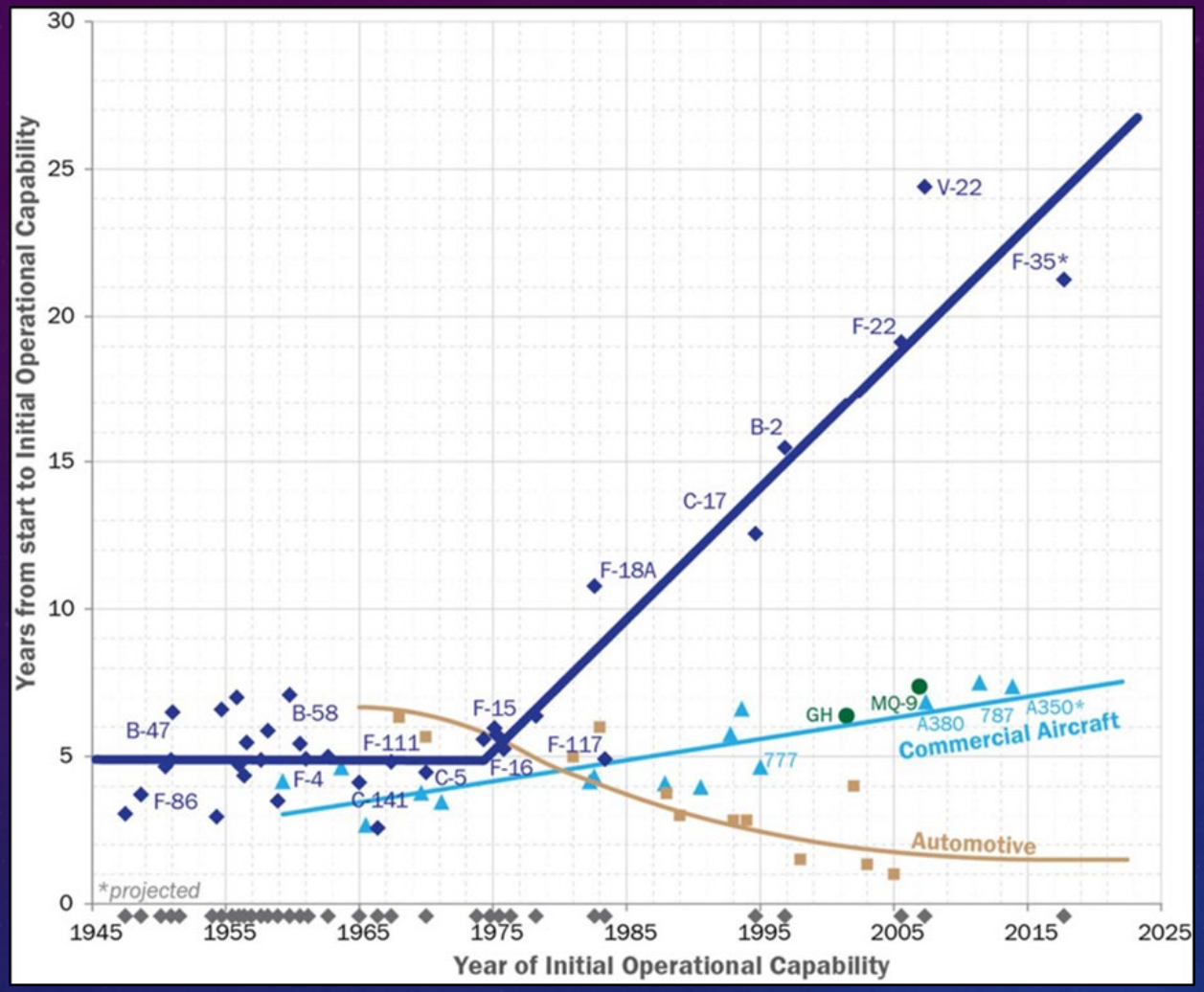
TIME TO FIELD CAPABILITIES



- Air Force Must digitally transform its acquisition enterprise
  - Must leverage digital technologies to fully interconnect Air Force research, acquisition, test, and sustainment enterprise
  - Must use digital models and artifacts integrated across the lifecycle

Problem: Document-based acquisition is not able to handle the technological complexity

Source of graphic: DARPA/TTO Study: 2012

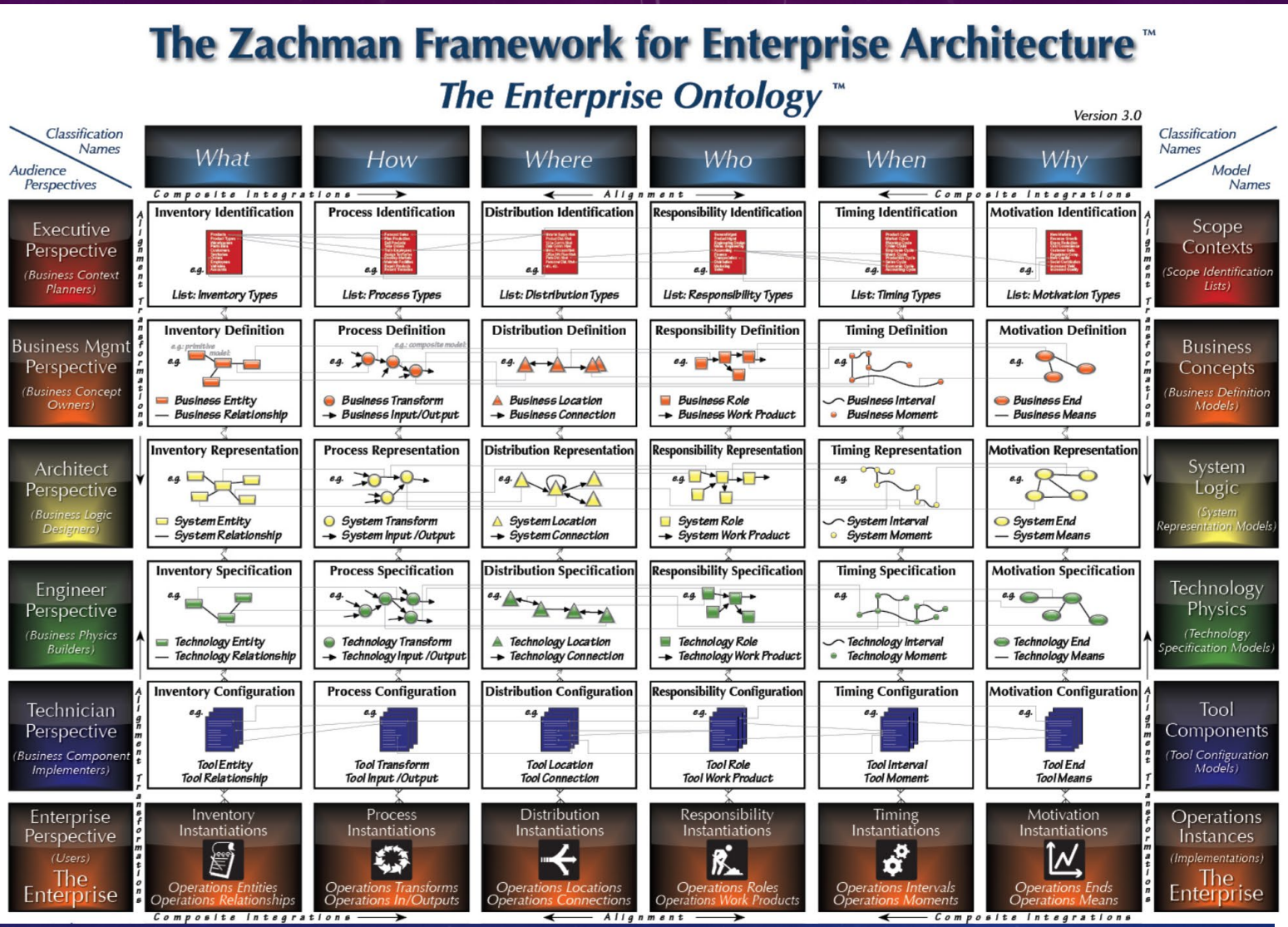
THE AFMC APPROACH - DIGITAL CAMPAIGN

Line of Effort	Line of Effort Name	Line of Effort Goal
0	Integrated Environment - IT Infrastructure	Provide overarching guidance to influence corporate IT improvement investments to enable a robust, secure infrastructure for the enterprise-wide Digital Campaign
1	Integrated Environment - Tools and Models	Provide an Integrated Digital Environment (IDE) of models and tools for collaboration, analysis, and visualization across the functional domains of AF users
2	Standards, Data, and Architectures	Provide overarching guidance on the use of Government Reference Architectures (GRA) and related standards and datasets for use in an integrated digital environment for application at the enterprise and system levels
3	Lifecycle Strategies and Processes	Develop Life Cycle Strategies and Processes for Technology Transition, System Acquisition and Product Support using an IDE, supporting lifecycle activities from concept development to disposal
4	Policy and Guidance	Assess and define the required policy and guidance updates/changes to enable full implementation of the Digital Transformation
5	Workforce and Culture	Drive culture change across the AFMC enterprise through training and change management, enabling a workforce well versed in Digital Engineering

THESIS RESEARCH QUESTIONS

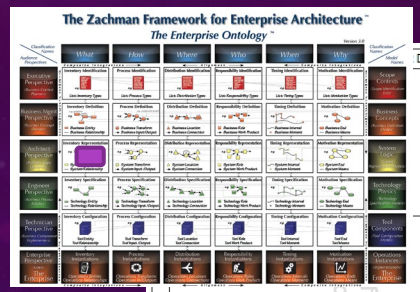
- How can the digital transformation of the AFMC acquisition enterprise be modeled to visualize the primary impacts?
- How does modeling the digital transformation of the AFMC acquisition enterprise identify secondary impacts?
- What, if any, are the Digital Campaign gaps in pursuing change?

MODELING ZACHMAN IN CAMEO WITH SYSML

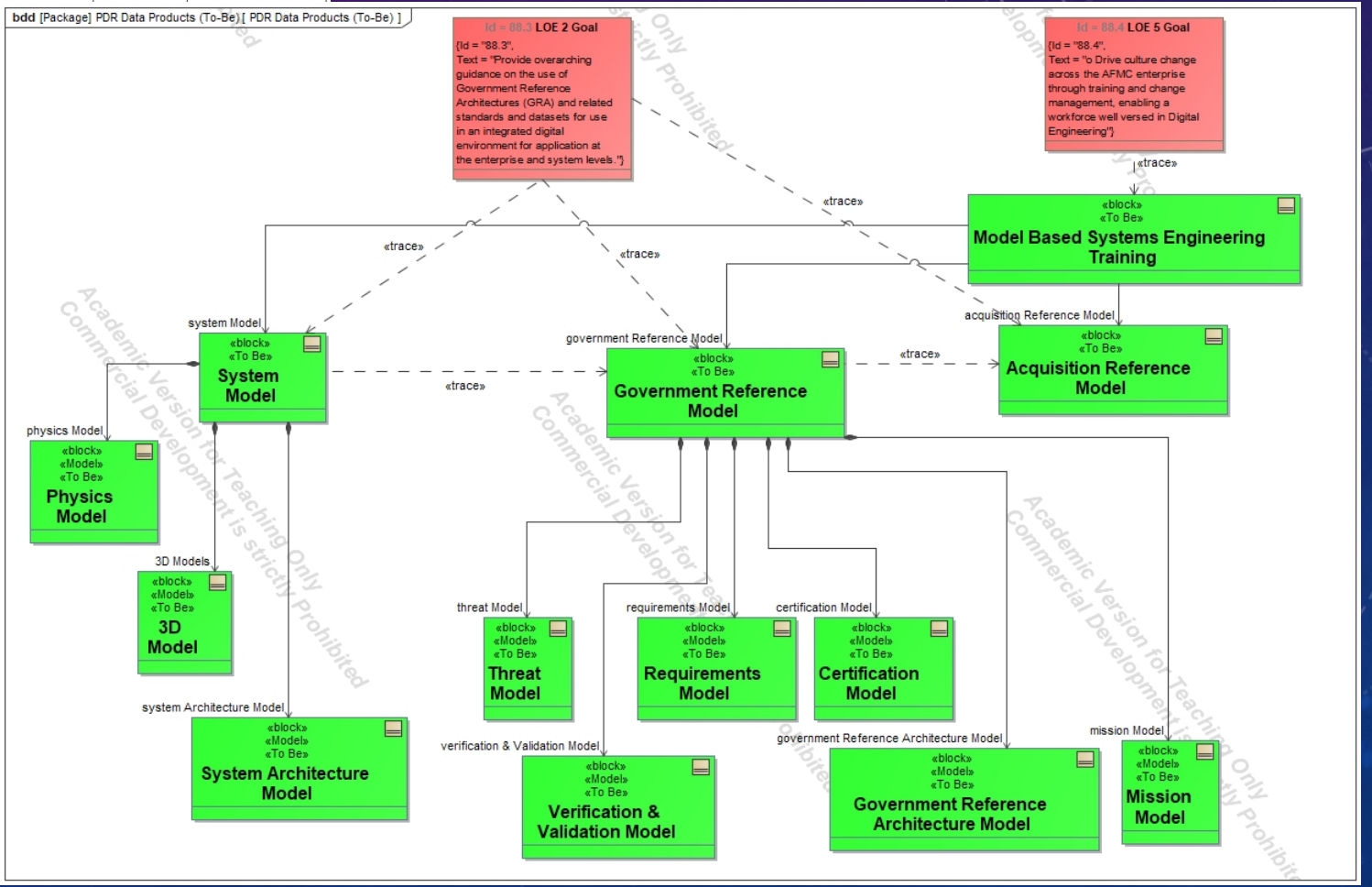


When interrogative was not done in this research

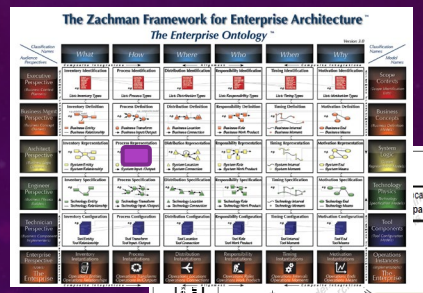
- 1. Zachman Framework (As-Is) (by mkassan)
  - 1. Executive/AFMC Executive Perspective (As-Is) (by mkassan)
    - 1. Why (Exec) (by mkassan)
    - 2. How (Exec) (by mkassan)
    - 3. What (Exec) (by mkassan)
    - 4. Who (Exec) (by mkassan)
    - 5. Where (Exec) (by mkassan)
  - 2. Business Manager/Program Director Perspective (As-Is) (by mkass
    - 1. Why (BusM) (by mkassan)
    - 2. How (BusM) (by mkassan)
    - 3. What (BusM) (by mkassan)
    - 4. Who (BusM) (by mkassan)
    - 5. Where (BusM) (by mkassan)
  - 3. Architect/Chief Engineer Perspective (As-Is) (by mkassan)
    - 1. Why (Arch) (by mkassan)
    - 2. How (Arch) (by mkassan)
    - 3. What (Arch) (by mkassan)
    - 4. Who (Arch) (by mkassan)
    - 5. Where (Arch) (by mkassan)
  - 4. Engineer/System Engineer Perspective (As-Is) (by mkassan)
    - 1. Why (Engr) (by mkassan)
    - 2. How (Engr) (by mkassan)
    - 3. What (Engr) (by mkassan)
    - 4. Who (Engr) (by mkassan)
    - 5. Where (Engr) (by mkassan)



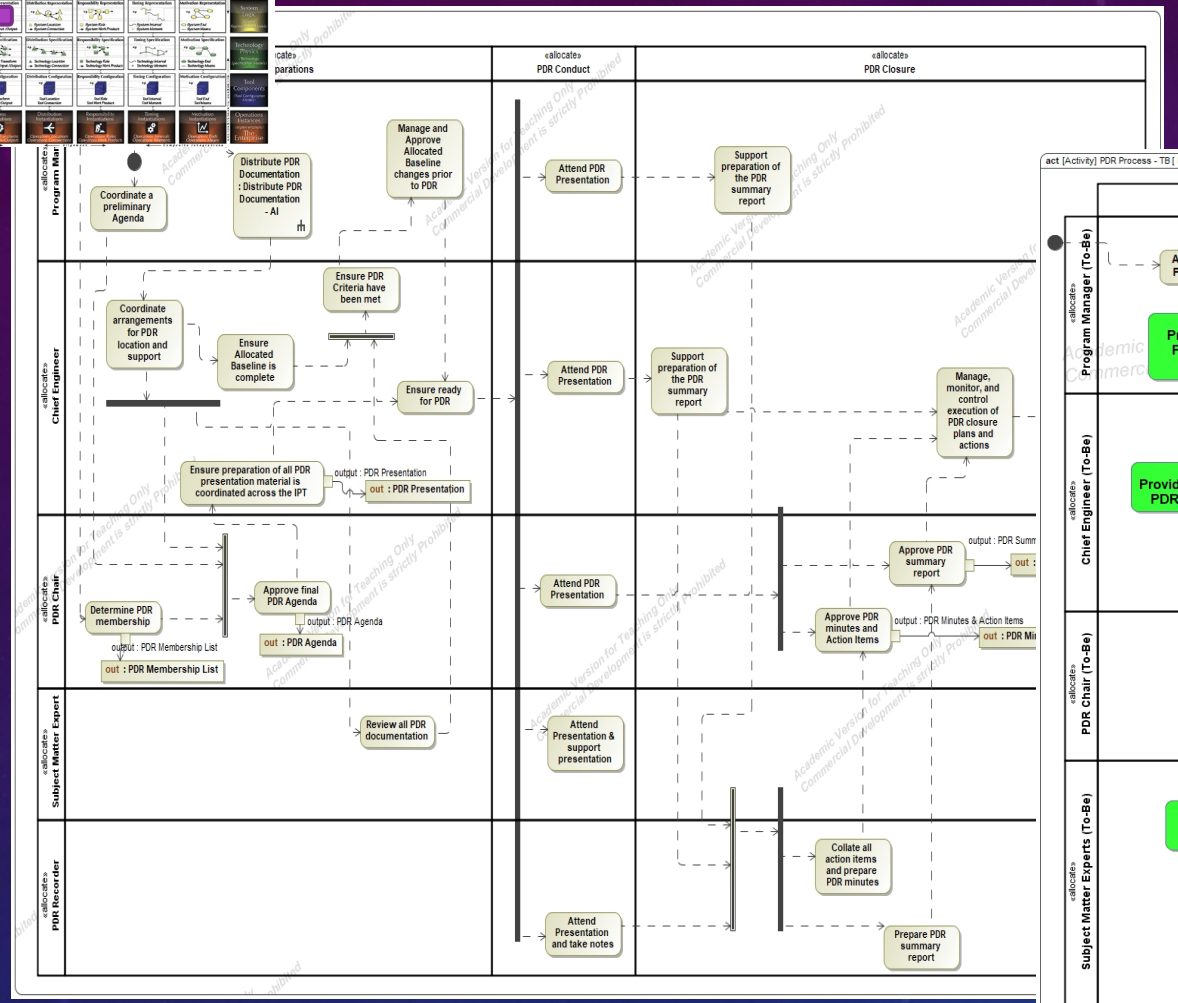
AS-IS => TO-BE

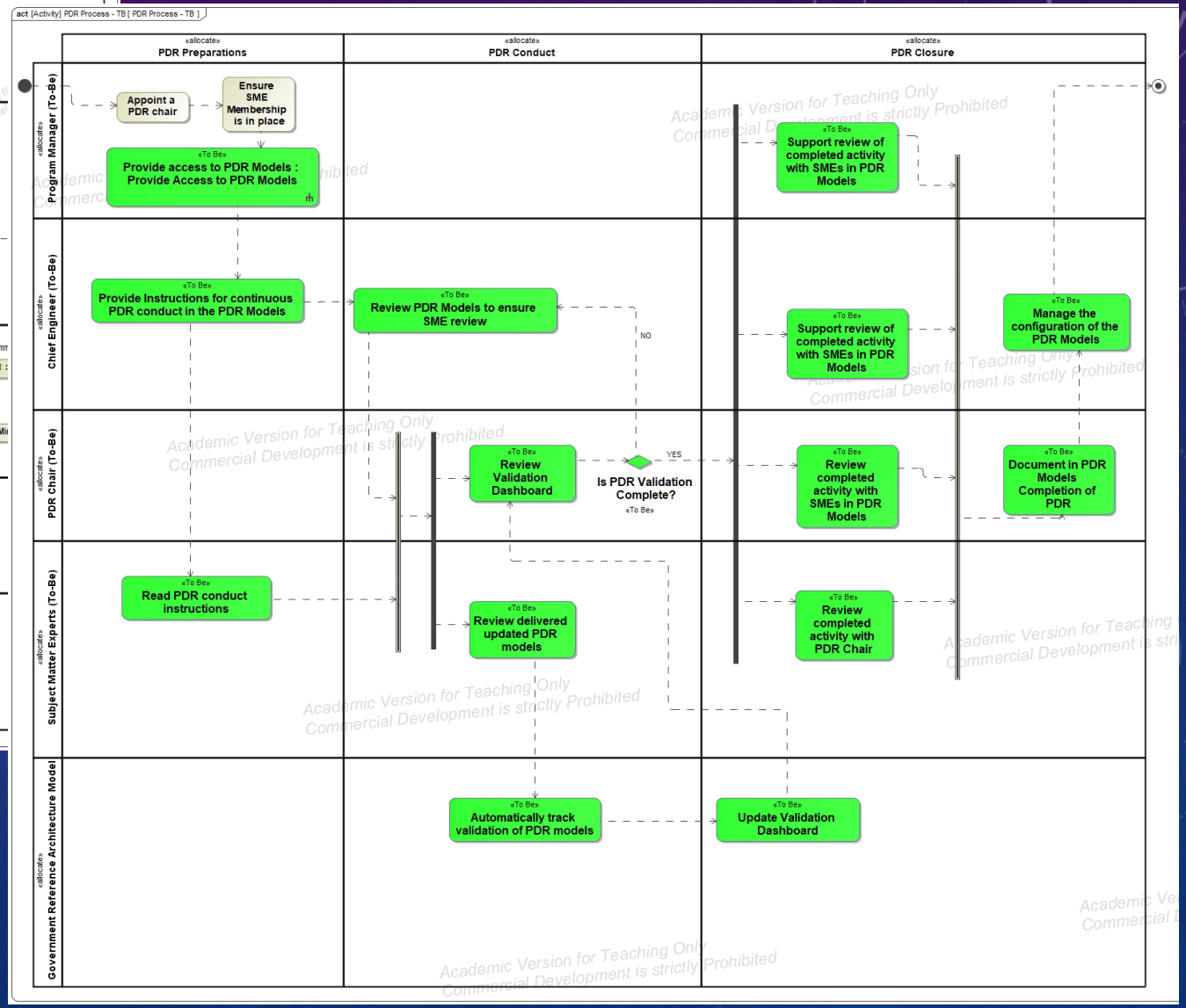


WHAT (ARCH): PDR DATA PRODUCTS



AS-IS => TO-BE





HOW(ARCH): CONDUCT PDR PROCESS

DIGITAL CAMPAIGN - PRIMARY AND SECONDARY IMPACTS

	WHY	HOW	WHAT	WHO	WHERE	WHEN
EXECUTIVE (AFMC Executive Leader)	Change to Stakeholders Requirements (LOE 5)	Conduct Acquisition Process	Enterprise Data [LOE 5]	Acquisition Enterprise	Acquisition Enterprise Locations	X
BUSINESS MANAGER (Program Director)	Change Technical Review Requirements (LOE 5) [LOE 0]	Conduct Technical Review Process [LOE 0]	PDR Data [LOE 0, 1]	Program Office	Technology Maturation and Risk Reduction Phase	X
ARCHITECT (Chief Engineer)	Change PDR Requirements (LOE 5) [LOE 2]	Change to PDR Process (LOE 3) [LOE 2, 5]	Change to PDR Data Products (LOE 2, 5) [LOE 0, 1, 3]	Change to PDR Participants (LOE 5) [LOE 0, 2, 3]	PDR Location [LOE 0]	X
ENGINEER (Systems Engineer)	Change PDR Technology Requirements (LOE 5) [LOE 0, 1]	Prepare/Maintain PDR Technology [LOE 0]	Change to PDR Technology (LOE 0, 1) [LOE 2, 5]	PDR Technology Personnel [LOE 0, 1]	PDR Technology Location [LOE 0]	X
TECHNICIAN (CONTRACTOR)	X	X	X	X	X	X

Secondary Digital Change	Primary Digital Change	(LOE X) = Line of Effort(s) Primary Impact to Cell	[LOE Y] = Line of Effort(s) Secondary Impact to Cell	PDR - Preliminary Design Review

Line of Effort (LOE) 0

- Provide overarching guidance to influence corporate IT improvement investments to enable a robust, secure infrastructure for the enterprise-wide Digital Campaign

LOE 1

- Provide an Integrated Digital Environment (IDE) of models and tools for collaboration, analysis, and visualization across the functional domains of AF users

LOE 2

- Provide overarching guidance on the use of Government Reference Architectures (GRA) and related standards and datasets for use in an integrated digital environment for application at the enterprise and system levels

LOE 3

- Develop Life Cycle Strategies and Processes for Technology Transition, System Acquisition and Product Support using an IDE, supporting lifecycle activities from concept development to disposal

LOE 5

- Drive culture change across the AFMC enterprise through training and change management, enabling a workforce well versed in Digital Engineering

DISCOVERING THE CAMPAIGN GAPS

GAPS

Logical - All interrogatives must have a primary goal to drive change to the functions of the enterprise.

Physical – All interrogatives must have a primary goal to drive implementation activities for an efficient transformation.

	WHY	HOW	WHAT	WHO	WHERE	WHEN
EXECUTIVE (AFMC Executive Leader)	Change to Stakeholders Requirements (LOE 5)	Conduct Acquisition Process	Enterprise Data [LOE 5]	Acquisition Enterprise	Acquisition Enterprise Locations	X
BUSINESS MANAGER (Program Director)	Change Technical Review Requirements (LOE 5) [LOE 0]	Conduct Technical Review Process [LOE 0]	PDR Data [LOE 0, 1]	Program Office	Technology Maturation and Risk Reduction Phase	X
ARCHITECT (Chief Engineer)	Change PDR Requirements (LOE 5) [LOE 2]	Change to PDR Process (LOE 3) [LOE 2, 5]	Change to PDR Data Products (LOE 2, 5) [LOE 0, 1, 3]	Change to PDR Participants (LOE 5) [LOE 0, 2, 3]	PDR Location [LOE 0]	X
ENGINEER (Systems Engineer)	Change PDR Technology Requirements (LOE 5) [LOE 0, 1]	Prepare/Maintain PDR Technology [LOE 0]	Change to PDR Technology (LOE 0, 1) [LOE 2, 5]	PDR Technology Personnel [LOE 0, 1]	PDR Technology Location [LOE 0]	X
TECHNICIAN (CONTRACTOR)	X	X	X	X	X	X

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For Instance: Goal could be: “Provide overarching guidance to influence IT locations for robust and secure infrastructure for business activities; ensure an organization and process is in place for the sustainment of IT infrastructure changes”

FINDINGS

1. Enterprise modeling in Zachman is analogous to a system decomposition under typical systems engineering approaches

2. As long as the transformation goals do not change, the Zachman cells, and those entities mapped into those cells, will be directly affected

3. Different from past process transformation efforts, this focus is on technology upgrades to drive process change

4. Revealed transformation gaps that should be covered with new or modified goals

THANK YOU